

**ABSTRACT OF THE DISCLOSURE**

A data processing apparatus (102) includes a processor core (104) having a bank of registers (106). The bank of registers (106) include a set of registers that are used for the storage of stack operands. Instructions from a second instruction set specifying stack operands are translated by an instruction translator (108) into instructions of a first instruction set (or control signals corresponding to those instructions) specifying register operands. These translated instructions are then executed by the processor core (104). The instruction translator (108) has multiple mapping states for controlling which registers corresponding to which stack operands within the stack. Changes between mapping states are carried out in dependence of stack operands being added to or removed from the set of registers.

[Figure 6]